

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CLEM H. BROWN

Appeal No. 1997-1186
Application No. 08/319,913¹

ON BRIEF

Before HAIRSTON, FLEMING and HECKER, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 19.

The disclosed invention is directed to a differential pressure sensor which includes a mounting flag, a sensor die and a molded housing. More specifically, the mounting flag is

¹ Application for patent filed October 7, 1994.

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detachable from a lead frame and has a flag opening for receiving a first pressure. The molded housing has a first port positioned over the flag opening and the sensor die for receiving the first pressure and a second port positioned over the sensor die for receiving a second pressure. In addition, the molded housing surrounds the mounting flag to secure it in a floating manner following its detachment from the leadframe.

Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A differential pressure sensor, comprising:

a mounting flag detachable from a leadframe and having a flag opening for receiving a first pressure;

a sensor die having a eutectic surface mounted to a bonding surface of said mounting flag for providing a hermetic seal between said sensor die and said mounting surface and coupled for receiving said first pressure; and

a molded housing having a first port positioned over said flag opening and said sensor die for receiving said first pressure, said molded housing having a second port positioned over said sensor die for receiving a second pressure, and said molded housing surrounding a portion of said mounting flag to secure said mounting flag in a floating manner following detachment from said leadframe to provide stress relief for said sensor die.

The references relied on by the examiner are:

Hingorany	3,629,668	Dec. 21, 1971
Hynecek (Hynecek)	4,023,562	May 17, 1977

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Tominaga (Tominaga)	4,287,501	Sep. 1,
1981		
Wamstad	4,399,707	Aug. 23, 1983
Ishibashi	5,394,751	Mar. 7,
1995		
	(filed Jan. 22, 1993)	

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Claims 1-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hingorany and Ishibashi in view of Tomigana and Wamstad and further in view of Hyncek.

Reference is made to the brief and the answer for the respective positions of the appellant and the examiner.

OPINION

We have carefully considered the entire record before us, and we will reverse the rejection of claims 1 through 19.

The grant of a patent is precluded "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the art." See 35 U.S.C. Section 103(a). Factual determinations of a *prima facie* case of obviousness include: (1) the scope and content of the prior art; (2) the level of ordinary skill in the prior art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 466-67 (1966). To establish a *prima facie* case of obviousness based on a

combination of the content of various references, there must be some teaching, suggestion or motivation in the prior art to make the specific combination proposed by the examiner. *In re Raynes*, 7 F.3d 1037, 1039, 28 USPQ2d 1630, 1631 (Fed. Cir. 1993); *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). Obviousness cannot be established by hindsight combination to produce the claimed invention. *In re Gorman*, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). Here, the examiner has failed to establish a *prima facie* case of obviousness.

Simply put, Hingorany, the primary reference upon which the examiner has relied, discloses a semiconductor package which includes a mounting flag (28) made of a material different from that of leadframe (12), the mounting flag being supported at the base of cavity (34) so that additional support is provided for the mounting flag. A semiconductor device (38) such as an integrated circuit is disposed on the mounting flag (Figures 2-5). Ishibashi discloses a semiconductor pressure sensor which includes a mounting flag (211) detachable from a leadframe (200) and a sensor die (31)

bonded to glass base (32) which is in turn mounted on the mounting flag (Figures 1 and 3). The examiner has determined that "neither Hingorany nor Ishibashi discloses the mounting flag with an opening to receive a first pressure (since it is not a differential pressure sensor), a housing with first and second ports for receiving first and second pressures, a sensor die eutectically mounted to provide a hermetic seal between the sensor die and mounting flag, nor [sic, or] the use of gold as a bonding surface" (Answer, page 5).

The examiner has relied on Tominaga, Wamstad and Hynecek as secondary references to make up for the above-noted deficiencies in Hingorany and Ishibashi. Tominaga discloses a differential pressure sensor (Figure 2) wherein an alumina base 22 has an opening upon which a sensor die is disposed. The examiner has taken the position that it would have been obvious to one of ordinary skill in the art to use a pressure sensor as the semiconductor device in Hingorany "as is shown by Ishibashi, and to further provide openings in the mounting flag to receive a first pressure, as well as separate openings in the housing to receive a first and second pressure, as disclosed by Tominaga ('501), in order to configure the sensor

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as a differential pressure sensor" (Answer, page 6). The examiner has also employed Wamstad and Hynecek, which disclose "a eutectic bond" and "a bonding surface", respectively, in order to overcome such deficiencies in Hingorany and Ishibashi.

Appellant has argued that the alumina base in Tominaga is not a mounting flange detachable from a leadframe as claimed and he has maintained that "[t]he fact that Tominaga discloses a hole in its alumina base does not lead one of ordinary skill in the art to form an opening in the mounting surfaces of Hingorany or Ishibashi. Hingorany and Ishibashi have no need for such an opening, hence, the combination makes no sense" (Brief, pages 5-6). We agree with the appellant.

Given the differences in structures and functions between appellant's claimed invention and the devices of Hingorany and Ishibashi, the examiner has not adequately explained, and we cannot discern, how he has proposed to modify Hingorany and Ishibashi in view of the teachings of Tominaga, Wamstad and Hynecek to arrive at the claimed invention. In contrast to the appellant's device, Hingorany is directed to a

semiconductor package which comprises a mounting flag made of material different from that of the leadframe, and the mounting flag is not detached from the leadframe. The examiner's proposed modification of Hingorany would not have arrived at the claimed invention because such a modified device would not have "a mounting flag detachable from a leadframe." In addition, the mounting flag (28) in Hingorany is mounted at the base of the cavity (34) so that *additional support* is provided for the mounting flag; therefore, the mounting flag cannot be secured "in a floating manner" as called for in the claimed invention.

By the same token, Ishibashi pertains to a semiconductor pressure sensor (not a differential pressure sensor), the modification of which as suggested by the examiner would not have arrived at the claimed invention because the glass base (32) underneath the sensor die (31) would have prevented a second pressure, if any, from reaching the sensor die (31). In the absence of the second pressure, Ishibashi can not operate as a differential pressure sensor. Moreover, a flag opening in the mounting flag and a second port for receiving a

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second pressure would not have changed Ishibashi's pressure sensor into a differential pressure sensor, absent further modifications, such as those related to the pressure sensor circuitry and the glass base (32).

Accordingly, it is clear to us that the examiner's proposed modification of Hingorany and Ishibashi (Answer, pages 4-7) would not have resulted in the claimed invention.

Furthermore, assuming Hingorany and Ishibashi may be capable of being modified so as to result in the claimed invention, there must be some teaching, suggestion or motivation in the prior art references to do so. "The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification."

In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). We see no such suggestion. Here, the examiner has relied upon hindsight analysis by reading into the prior art appellant's own teachings to arrive at the determination of obviousness. It is impermissible to use hindsight, *i.e.*, use the claimed invention as a template to piece together the

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teachings of prior art to establish obviousness. *In re Gorman*, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991).

In short, since the examiner has not established a *prima facie* case of obviousness, we will not sustain the examiner's rejection under 35 U.S.C. §103(a) of claims 1 through 19.

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DECISION

The decision of the examiner rejecting claims 1 through
19 under 35 U.S.C. § 103(a) is reversed.

REVERSED

KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
)	
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)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
)	
STUART N. HECKER)	
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